

(3 Vols.)

THE
AGRICULTURAL LEDGER.

1897—No. 17.

CALOTROPIS PROCERA.

(SILK-COTTON-FLOSS.)

[*DICTIONARY OF ECONOMIC PRODUCTS, Vol. II., C. 191-7.*]

SILK-COTTON (FLOSS) OF CALOTROPIS PROCERA.

Reports on the Fibre by MR. C. F. CROSS, Scientific Referee on Fibres, and MR. C. E. COLLYER, Practical Expert Referee at the Imperial Institute, furnished through SIR F. A. ABEL, BART., K.C.B., Honorary Secretary and General Director.

Other DICTIONARY article that may be consulted :
Calotropis gigantea, Vol. II., C. 179.



CALCUTTA :
OFFICE OF THE SUPERINTENDENT, GOVERNMENT PRINTING, INDIA.
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The objects of THE AGRICULTURAL LEDGER are :—

- (1) To provide information connected with agriculture or with economic products in a form which will admit of its ready transfer to ledgers ;
- (2) To secure the maintenance of uniform ledgers (on the plan of the Dictionary) in all offices concerned in agricultural subjects throughout India, so that references to ledger entries made in any report or publication may be readily utilised in all offices where ledgers are kept ;
- (3) To admit of the circulation, in convenient form, of information on any subject connected with agriculture or economic products to officials or other persons interested therein ;
- (4) To secure a connection between all papers of interest published on subjects relating to economic products and the official Dictionary of Economic Products. With this object the information published in these Ledgers will uniformly be given under the name and number of the Dictionary article which they more especially amplify. When the subject dealt with has not been taken up in the Dictionary, the position it very possibly would occupy in future issues of that work will be assigned to it.

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(Fibres.)

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In 1894 the authorities at the Imperial Institute asked (in letter No. 28 F. S. S., dated 17th July) to be supplied with certain fibres including the bark fibre of **Calotropis procera**. The request was duly dealt with, and registered (No. 43) for action during 1895-96.

Repeated enquiries had been made for the floss or silk cotton of the seeds. Among the samples hitherto received by this office, some uncertainty existed as to whether the *Akunda* floss supplied had been obtained from **Calotropis procera** or **C. gigantea**.

It was accordingly thought desirable to take the opportunity afforded while collecting the bark fibre of **Calotropis procera** to procure the floss also, and in response to this office request a quantity was obtained through the Director, Land Records and Agriculture, North-West Provinces and Oudh, from the Superintendent, Government Botanic Garden, Saharunpur.

A portion of that supply of the floss was accordingly sent to London. The sample was submitted by the Honorary Secretary and General Director, Imperial Institute, to the Scientific Referee on Fibres, and also to the Practical Expert Referee of the Institute.

HISTORY
of
ENQUIRY.

C. 191-7.

**CALOTROPIS
procera.****Silk-Cotton (Floss) of****HISTORY
of
ENQUIRY.**

As far as can be ascertained, this is the first time a chemical analysis has been made of a sample of floss or silk-cotton. The investigations of Messrs. Cross and Bevan into the constitution of fibrous substances has been of the greatest scientific interest as it has enabled the whole series of vegetable cellular substances to be classified in an intelligible manner.

**Now first
analysed.**

Their arrangement of the celluloses, as the result of a large number of experiments, may be given as follows:—

They are first divided into two main groups—

1. Celluloses resisting hydrolysis (chiefly fibrous).
2. Celluloses easily hydrolysed (chiefly cellular).

The first group is again referred to three sub-groups—

- | | |
|---------------------|--------------|
| A.—Cotton | type—Cotton. |
| B.—Wood cellulose | type—Jute. |
| C.—Cereal cellulose | type—Straw. |

Furfural.

One particular feature of these cellular and fibrous bodies is the relative amount of furfural yielded by them. Furfural is an oily product obtained on distilling bran with hydrochloric acid, but is afforded by all the above substances in a greater or less degree. The percentage of furfural yielded by articles of the sub-groups are—

A.	B.	C.
0.1	3.0-5.0	12.0-15.0

The quantity of furfural obtained from the silk-cotton is higher than indicated in the above list, and would suggest the inclusion of flosses in the second group, which comprises celluloses of the starch type.

**Bark fibre
not easily
procured.**

The fibre from the bark of the two species of *Calotropis*, viz., *gigantea* and *procera*, is being obtained for experiment. Correspondents have complained of the extreme difficulty experienced in separating the fibre in sufficient abundance and suitable condition, but a consignment is expected from the Director of Land Records and Agriculture in Madras.

The information already obtained regarding flosses is, however, of sufficient importance to justify its publication in *The Agricultural Ledger*. The facts brought to light will doubtless be of interest to those desiring to develop a trade in this class of Indian fibres. Sir F. A. Abel's letter reviewing the results of examination of the floss by Mr. G. F. Cross, Scientific Referee, and the opinion expressed C. 191-7.

Calotropis procera. Messrs. Cross & Collyer.

**CALOTROPIS
procera.**

by Mr. C. E. Collyer, Practical Expert Referee, may accordingly be given in full.

IMPERIAL
INSTITUTE
REPORT.

From Sir F. A. Abel, Bart., K.C.B., *Honorary Secretary and General Director, Imperial Institute, London*, to George Watt, Esq., M.B., C.M., C.I.E., *Reporter on Economic Products to the Government of India, Indian Museum, Calcutta*,—F. S. S. No. 119, dated London, 18th September 1897.

"In Flying Seal letter addressed by me to you, No. 28, dated 17th July 1894, I asked that the Imperial Institute might be furnished with samples of the fibres of *Marsdenia tenacissima*, *Calotropis gigantea* and *Calotropis procera* 'in some quantity,' and in your letter of the 28th August of that year, you informed me that the fibres in question were registered to be dealt with in the year 1895-96. You also explained that *Calotropis procera* afforded two fibres, but that it was presumed that the bark fibre was the one which we desired to possess. Up to the present time we have not received a sample of the bark fibre in question, but, in June last, I received from Mr. Royle a sample of the silk-cotton (floss) of *Calotropis procera*, to which reference was made by you in your letter to him of July 7th, 1896. This floss was forwarded together with the seeds which, in the letter just referred to, you spoke of as deserving of chemical examination in consequence of the high position which the bark of the plant furnishing them stands in popular favour as a medicinal agent. The seeds were handed over to Professor Dunstan for examination, and will no doubt be shortly reported upon. The floss has been submitted by me to our Scientific Referee on fibres, Mr. G. F. Cross, who has just reported the following as the results furnished by its examination. The more important constants of the fibre which has the chemical characteristics of lignocellulose, are as follows:—

The floss :
Report of
Scientific
Referee.

Moisture	.	.	.	9.0 per cent.
Ash	.	.	.	3.0 per cent.
Hydrolysis	{	Alkali	.	(1% NaOH) 26.2 per cent. (loss).
		Acid	.	(1% H_2SO_4) 24.7 per cent. (loss).
Cellulose	.	.	.	69.8 per cent.
Furfural	.	.	.	19.5 per cent.

"Mr. Cross states that this floss fibre is an extremely interesting chemical type, containing as it does a very high and, in his experience, unique, percentage of furfural. He adds, however, that,

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**CALOTROPIS
procera.****Silk-Cotton (Floss) of *Calotropis procera*.****IMPERIAL
INSTITUTE
REPORT.**

Extensive
use not
probable.

The floss :
Report of
Export
Referee.

The Java
product
stated to be
superior.

Character of
present
sample.

Akund
cotton :
other
samples
described.

Prospects of
future trade.

How the floss
should be
packed for
export.

although it may find use for some applications of floss fibre, its somewhat unfavourable chemical characteristics are not likely to recommend it to the spinner in view of the present low price of cotton.

"I have also submitted a sample of the floss of **Calotropis** to our practical expert Referee, Mr. C. E. Collyer, who reports as follows:—

"This particular floss was in considerable demand in the markets a few years ago for fancy textile purposes, but owing to the difficulties presented by the variations in the quality of parcels supplied, and to the intermittent supply when requirements arose, the material has dropped out of use. The quality of the Indian growth is inferior to the product of Java, which is probably derived from **Calotropis gigantea**, small samples of which have occasionally been received from India. The specimen now submitted is of fair colour, and of rather short staple and somewhat towy in character, containing an excessive quantity of inferior immature fibre and seed fragments.

"He has had under his hand many varieties of the floss in question, mostly from Calcutta (where it is sometimes called "*akund* cotton"), which were mostly inferior to the sample now submitted to him. These samples were sold at as low a price as one penny per pound, and there was but little demand for them at that price. The trade in this floss may possibly be revived if a moderate but continuous supply can be guaranteed. If of good quality, it would realise prices ranging from 4*d.* to 5*d.* per pound, c. f. and i. terms. In packing for sale, the floss should be handled as little as possible, the pods and seeds being entirely removed and the floss left in its natural condition unopened; any discoloured portions should be separated and forwarded separately. The bales received here from Java usually contain 80 to 90 pounds of floss tightly sewn in canvas, but not pressed.

"I presume that we shall receive, as promised, samples of the *bark* fibre of **Calotropis procera**, as its chemical examination is of interest in view of the popularity of the bark as a medicinal agent."

C. 191-7.

G. I. C. P. —No. 480 R. & A.—1-12-97.—2,000.—J. C.

All communications regarding THE AGRICULTURAL LEDGER should be addressed to the Editor, Dr. George Watt, Reporter on Economic Products to the Government of India, Calcutta.

The objects of this publication (as already stated) are to gradually develop and perfect our knowledge of Indian Agricultural and Economic questions. Contributions or corrections and additions will therefore be most welcome.

In order to preserve a necessary relation to the various Departments of Government, contributions will be classified and numbered under certain series. Thus, for example, papers on Veterinary subjects will be registered under the Veterinary Series; those on Forestry in the Forest Series. Papers of more direct Agricultural or Industrial interest will be grouped according as the products dealt with belong to the Vegetable or Animal Kingdom. In a like manner, contributions on Mineral and Metallic subjects will be registered under the Mineral Series.

This sheet and the title-page may be removed when the subject-matter is filed in its proper place, according to the letter and number shown at the bottom of each page.